

UNITED STATES-MEXICO BORDER AREA, AS DELINEATED
BY A SHARED-WATER RESOURCES PERSPECTIVE

Fact Sheet



INTRODUCTION

The 1983 La Paz Agreement defined the United States-Mexico border area as a corridor extending 100 kilometers on each side of the international boundary between the two nations. From a variety of different perspectives, this somewhat pragmatic definition of the border area may have been reasonable. Recent passage of the North American Free Trade Agreement (NAFTA) and the subsequent establishment of the North American Development Bank and the Border Environment Cooperation Commission indicate the importance each country places on the U.S.-Mexico border region. NAFTA-related development has affected, and will continue to affect, the border resources we share. However, for describing and assessing the shared-water resources of the border region, the arbitrary delineation of the "border area" defined in the 1983 agreement is not sufficient; relevant hydrologic and hydrogeologic criteria must be used to delineate the extent of the border area.

APPROACH

Surface-water drainage basins were used as the primary basis for defining and delineating the extent of the border area from a shared-water resources perspective. Those drainage basins either directly adjacent to or crossing the international boundary were automatically included in the border area, those basins containing unconsolidated aquifers that extended to or across the international boundary also were included, and finally "protected areas" adjacent to included basins were selectively added to the border area.

Delineations of the drainage basins in the United States were obtained from digital coverages of hydrologic units derived by the U.S. Geological Survey (Seaber, Kapinos, and Knapp, 1984). The digital coverages were obtained at a 1 : 250,000 scale. Delineations of the drainage basins in Mexico were digitized from 1 : 250,000-scale Hydrologic Maps of Surface Water produced by the Direccion General de Geografia del Territorio Nacional (1981); this series of maps presents the same information at the same map projection as the 1 : 250,000-scale maps produced for the United States by the U.S. Geological Survey. The maps for Mexico show the locations of surface-water drainage basins, stream gages, climatological stations, and contours of equal temperature and precipitation. Small adjustments to a few basin delineations were made to provide basin continuity across the international boundary.

The drainage basins associated with the lower reaches of the following rivers were used to define the border area: Colorado, Gila, Rio Grande, Rio Conchos, Pecos, Rio Salado, and Rio San Juan. For each of these regional rivers, a nearby discharge gaging station was used as the basis for delineating the extent of the downstream drainage basin.

EXTENT OF THE BORDER AREA

As defined in this report, the border area contains about 157,600 square miles (408,185 square kilometers), and extends nearly 1,920 miles (about 3,090 km) between the Gulf of Mexico and the Pacific Ocean. The limits of the hydrologic border area, as presented in this report, range from 4.5 to 285.2 kilometers from the international boundary. In size, the border area is similar to California (which is 158,693 square miles, or about 411,000 square kilometers), and is larger than the combined area of the twelve smallest states in the U.S. In order to better categorize the water-related issues, the border area has been divided into 8 subareas that have similar hydrologic and physiographic features.

The Pacific Basins/Salton Trough subarea (subarea 1) contains 7 basins that drain either to the Pacific Ocean or to inland seas. The Colorado River/Sea of Cortez subarea (subarea 2) contains 11 basins that drain either to the Colorado River below the gaging station at Parker Dam, to the lower Gila River below the gaging station at Painted Rock Dam, or to the Sea of Cortez. The Mexican Highlands subarea (subarea 3) contains 14 basins that drain to rivers in southern Arizona, southwestern New Mexico, northern Sonora, or the extreme northwestern tip of Chihuahua. The Mimbres/Animas Basins subarea (subarea 4) contains 5 basins that drain internally in southern New Mexico and northern Chihuahua. The Rio Grande--Elephant Butte Reservoir to above Rio Conchos subarea (subarea 5) contains 14 basins that drain to that reach of the Rio Grande below the gaging station at Elephant Butte Dam. The Rio Grande--Rio Conchos to Amistad Reservoir subarea (subarea 6) contains 32 basins that drain either to that reach of the Rio Grande, to the lower reach of the Rio Conchos below the now suspended Falomir gaging station, or to the lower reach of the Pecos River below the gaging station at Girvin. The Rio Grande--below Amistad Reservoir to Falcon Reservoir subarea (subarea 7) contains 13 basins that drain either to that reach of the Rio Grande, or to the lower reach of the Rio Salado below the gaging station at Las Tortillas. And finally, the Lower Rio Grande Valley--below Falcon Reservoir to the Gulf of Mexico subarea (subarea 8) contains 11 basins that drain either to that reach of the Rio Grande, to the lower reach of the Rio San Juan below the gaging station at Santa Rosalia, or to Arroyo Colorado in southern Texas. The areal extent of the subareas is listed in the table shown on the back page of this report.

The U.S-Mexico Border Area is populated and large--it contains approximately 9.5 million people in an area of 157,600 square miles, about the size of California.

MAP OF UNITED STATES - MEXICO BORDER AREA



SHARED-WATER RESOURCES ISSUES TEAM

This map of the United States-Mexico border area, as delineated by a shared-water resources perspective, is the first product of a multi-bureau "issues team" operating under the United States Department of the Interior (DOI) sponsored U.S.-Mexico Border Field Coordinating Committee (FCC). The seven DOI Bureaus are participating in the FCC through collaboration and coordination to develop a strong border program, and hence to develop a comprehensive understanding of factors necessary to conserve and protect the shared natural and cultural resources.

The U.S.-Mexico border area exists, in general, in an arid climate with limited water resources. In spite of this, and to a large extent accelerated by NAFTA, the border area continues to develop at a very rapid rate. Water managers face many difficult and unique water-resources issues and challenges. The Shared-Water Resources Issues Team is tasked with defining the basic hydrologic and geologic information, data deficiencies, major issues, and potential directions that future efforts should take in order to provide the necessary data and information frameworks upon which critical decisions can be made and actions evaluated.

MAP COMPILATION

This map was constructed primarily from existing U.S. Geological Survey digital coverages at scales of 1:100,000 and 1:250,000, using ARC-INFO software version 6.1.1 (December 1992). The coverages were transformed to an Albers Equal Area Conic (1805) projection.

The extent of federal lands shown on the above map was derived from various sources. Digital coverages of federal lands in California, Arizona, and New Mexico were obtained from U.S. Bureau of Land Management in each state, and the federal lands in Texas were derived from U.S. Geological Survey digital coverage of U.S. federal lands (June 1992 version). Small parcels of federal lands are not shown on a map of this scale, and no attempt has been made to show "federal lands" in Mexico.

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ELECTRONIC ACCESS TO REPORT

Electronic copies of this Fact Sheet including the map, along with other information regarding the border area, are available on the World Wide Web by accessing the DOI U.S. - Mexico Field Coordinating Committee "Home Page" at "<http://www.usgs.gov/doi/fcc>". As additional digital coverages are verified and checked, they will be added to the other coverages available for access on the Internet.

Areal extent of U.S. - Mexico border area, by subarea

[Data from digital coverages; all areas are rounded to nearest 5 SQUARE MILES]

SUBAREA NUMBER AND NAME	TOTAL AREA, in square miles	AREA IN MEXICO, in square miles	AREA IN U.S., in square miles	FEDERAL LAND IN U.S., in square miles
1. Pacific Basins/Salton Trough	14,000	4,870	9,130	6,355
2. Colorado River/Sea of Cortez	22,590	8,370	14,220	12,970
3. Mexican Highlands	21,840	5,395	16,445	9,665
4. Mimbres/Animas Basins	12,450	6,185	6,265	3,380
5. Rio Grande--Elephant Butte Reservoir to above Rio Conchos	28,940	5,760	23,180	10,835
6. Rio Grande--Rio Conchos to Amistad Reservoir	34,630	13,910	20,720	1,495
7. Rio Grande--below Amistad Reservoir to Falcon Reservoir	12,910	7,840	5,070	60
8. Lower Rio Grande Valley--below Falcon Reservoir to the Gulf of Mexico	10,240	6,155	4,085	70
Total	157,600	58,485	99,115	44,830

REFERENCES

As shown in the above table, about 63 per cent of the border area lies in the United States and 37 per cent lies in Mexico. Within the U.S. part of the border area, the Federal government owns or administers approximately 45 per cent of the land; about 91 per cent of the land in the U.S. part of the Colorado River/Sea of Cortez subarea is owned or administered by the Federal government.

Seaber, P.R., Kapinos, F.P., and Knapp, G.L., 1984, State Hydrologic Unit Maps: U.S. Geological Survey Open-File Report 84-708, 22 p. plus tables.

Direccion General de Geografia del Territorio Nacional, 1981, Carta Hidrologica de Aguas Superficiales: Secretaria de Programacion y Presupuesto, 1:250,000 scale.

*Authors: Dennis Woodward and Roger Durall,
U.S. Geological Survey, Albuquerque, New Mexico*